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ABSTRACT

The report presents abstracts of 29 research studies which were designed to identify labor market requirements and evaluate vocational educational programs in the Wisconsin Vocational, Technical, and Adult Education System (VTAE). The studies were designed to answer the following questions: (1) What skills, knowledges, and competencies are important in the performance of an employee as perceived by the employee and by the employer? (2) To what extent are the present training programs meeting requirements? (3) What changes are needed to update the present programs? Based on these questions, surveys and interviews of former VTAE students and employers were conducted. The results of the surveys were reviewed in workshops by program instructors and supervisory staff and changes were incorporated into the curriculums. Findings are included for general education programs and for the occupational areas of agriculture, business and office, distributive, health, home economics, and trade and industrial. In addition, special studies were conducted to ascertain needs of disadvantaged and handicapped groups as well as overall manpower opportunities. (KH)

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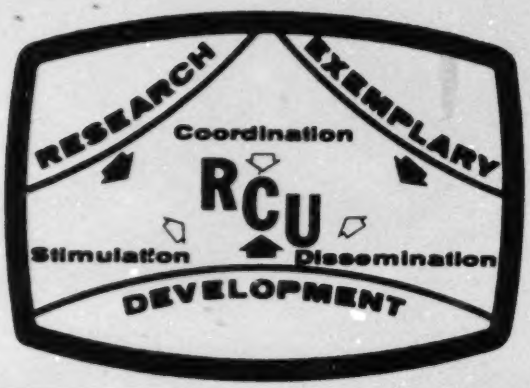
MAINTAINING RELEVANCE IN WISCONSIN VOCATIONAL-TECHNICAL EDUCATION PROGRAMS THROUGH APPLIED RESEARCH IN THE WORLD OF WORK

A Partial Listing of Summaries of Findings and Recommendations from Validation, Evaluation and Manpower Studies Involving Surveys of VTAE Graduates and Employers



Prepared by
The Research Coordinating Unit (RCU)

1975

Wisconsin Board of Vocational, Technical and Adult Education
Madison, Wisconsin

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Foreword

The rapidly changing technological society results in changing skills and knowledges required in the labor force. This results in a need for relevant responsive changes and improvements in the occupational education and training programs for the world of work.

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ABSTRACT

This report contains summaries of some of the findings of research studies which were designed to identify changing labor market requirements and to evaluate vocational education programs in the Wisconsin VTAE system.

Basic questions to be answered by the studies were:

1. What skills, knowledges and competencies are important in the performance of an employee (usually technician) as perceived by the employee and by the employer?

2. To what extent are the present vocational-technical education and training programs meeting the requirements of the employers and graduates?

3. What changes or revisions are needed to update the present vocational-technical education and training programs?

Surveys and interviews of former VTAE students and employers were conducted.

Many specific needs were identified, and recommendations made for improving the relevancy and quality of the VTAE programs.

Many of these studies were followed up with workshops for appropriate instructors and supervisory staff to review and incorporate appropriate changes in the program of instruction.

These studies serve as valuable tools for use by vocational curriculum developers, evaluators, administrators and advisory committees in making decisions toward maintaining relevancy of Vocational, Technical and Adult Education programs, services, and activities in the Wisconsin VTAE system.

I

INTRODUCTION

This report summarizes the results of over 25 studies pertaining to the relevancy of vocational-technical education programs to the world of work.

These studies were supported with research funds under Part C of the Vocational Education Amendments of 1968 and with local matching funds. They involved: (1) identification and validation of job tasks, (2) evaluation of vocational-technical education curricula, and (3) determination of values as perceived by employees (former students) and employers through interviews and mail surveys.

Validation is the process of determining the validity or relevance of something, or the degree to which it is pertinent, applicable, or accomplishing that for which it is designed or intended, e.g., vocational instruction.

Evaluation is the process of examining and judging the worth, quality, significance or condition of something, e.g., vocational education instruction.

Need: The increasing developments in our rapidly changing technological society render occupations and job skills obsolete and create new labor market requirements which necessitate readily responsive vocational education and training programs to meet these rapidly changing needs.

The vocational-technical education curriculum designer has the dual responsibility of: (1) serving the student to provide an educational opportunity which coincides with his/her abilities, interests, and training needs, and (2) serving industry and the employment market by preparing students in occupational areas where they are capable of succeeding and where opportunities exist.

Objectives: The overall goal for these projects was to evaluate selected programs and curricula in Wisconsin's Vocational, Technical and Adult Education System in terms of meeting employer and student needs.

Specific studies were designed to answer the following questions: (1) What skills, abilities and competencies are important in the performance of an employee (usually technician) as perceived by the employee and by the employer? (2) To what extent are the present vocational-technical education and training programs meeting the requirements of the employers and graduates? (3) What changes or revisions are needed to update the present vocational-technical education and training programs?

This report does not include all of the surveys and studies conducted in the areas of job task validation, curriculum evaluation, occupational education needs, and manpower supply and demands. Many of these have been conducted by VTAE districts and other agencies without financial support from the State Board of Vocational, Technical and Adult Education.

Points of view or opinions stated in the summaries of the findings of the research reported herein does not necessarily represent official State Board or U.S. Office of Education position or policy.

II

METHODOLOGY

The use of student follow-up procedures and surveys of employers are valuable means to evaluate vocational education and training programs.

Over twenty-five studies have been funded in the VTAE system during the past six years in the area of labor market requirements and selected curricula evaluation.

The identification of needs for study, development of proposals, preparation of reports, and uses of findings, have been coordinated through the combined efforts of state program development and local VTAE staff, university consultants, and the Research Coordinating Unit (RCU).

The procedures included: (1) identifying a VTAE district to plan and conduct the study, (2) sending a letter from the State Director requesting lists of graduates and their employers, (3) developing a questionnaire in cooperation with state staff, and other consultants, (4) collecting the data by personal interview and/or mailed questionnaire, (5) preparing the final report (25 copies for dissemination and review, and (6) conducting workshops for incorporating project findings and recommendations into curriculum improvements.

The questionnaires generally contained items relevant to: (1) background information to identify the nature of the respondent, (2) listings of job functions, tasks and activities to verify frequency of performance on the job (3) listings of knowledges and skills to obtain ratings as to their degree of importance on the job and (4) curricular outlines to obtain evaluation ratings.

In some studies ad hoc committees involving representative employers and employees in the field were formed to develop and review listings of competencies and drafts of questionnaires and final reports. These committees also helped to gain cooperation in responding to the study.

Many of the programs which were studied involved graduates from less than the 16 VTAE districts because not all districts offer all programs. However, the students may have originally come from various parts of the State or from out-of-state. Most of the survey samples ranged between 100 to 400 respondents. Some were less and some were larger.

Following each study, workshops involving the appropriate instructors and coordinators were conducted by state board program staff to review the findings and incorporate appropriate improvements into the programs and curriculums.

III

SUMMARIES OF FINDINGS

Agricultural Occupations

12.179 EVALUATION OF THE FARM TRAINING PROGRAM IN WISCONSIN, L. Warner, FVTI, Appleton, FY 75.

A report based on responses through 100% interview from 230 farmers and 57 instructors. Sixty-seven topics, tasks, jobs or competencies were listed in the questionnaire. More than two-thirds of the trainees and instructors agreed that 27 of the listed jobs should be taught individually as opposed to group instruction. Thirty-five topics were indicated as being applicable to either individual or group instruction. "Analyzing Records" was rated "high" as a problem requiring a farm visit. Several suggestions were made for improving the curriculum and instruction strategies.

03.026 EMPLOYER EVALUATION FOR THE LAYOUT AND ERECTION OF AGRICULTURE POLE BUILDINGS, DAIRY EQUIPMENT AND MATERIALS HANDLING, R. Pasch, D. Wagner, SWVTI, Fennimore, FY 75.

A study to determine the basic competencies that are necessary to obtain job-entry level employment as an agricultural building serviceman.

The survey instrument incorporating 50 competencies and 9 areas of instruction was distributed to 50 employers and 25 graduates of Agricultural Building Serviceman programs. The results represent opinions of the employer and graduates of the above program. The survey made no attempt to determine the degree of competency in the farm building skills by employers or employees but rather to analyze and validate tasks and job functions as determined by frequency of performance, difficulty of performance and length of time performed. Employers felt that graduates were qualified for job entry employmen The four skills receiving the highest rank order by both employers and employees were: locating corners of buildings, leveling corner poles, locating building lines, and testing corners for squareness. Due to the rapid growth and change found in the farm structure industry, some of the tasks that are performed periodically on-the-job are not identified and therefore results are not tabulated.

W.1712 FUNCTION-TASK-COMPETENCY APPROACH TO CURRICULUM DEVELOPMENT IN VOCATIONA EDUCATION IN AGRICULTURE: H. Matteson, UW-Madison, FY 74.

The first of a series of research reports emanating from a longitudinal research project. This document provides the background, the theoretical foundation and framework for research efforts. Several approaches to curriculum developmen are discussed, e.g., (1) subject approach, (2) integrated approach, (3) job analysis, occupational analysis, or competency approach, (4) occupational areas or clusters approach, and (5) the functions of industry approach.

A model for Function-Task-Competency approach to curriculum development is presented.

Business and Office Occupations

19.011 A STUDY OF THE TWO-YEAR ASSOCIATE DEGREE SECRETARIAL SCIENCE PROGRAM OFFERED IN THE VTAE SCHOOLS IN WISCONSIN. C. Bluhm, M. Wepner, M. Wiersum, D. Goodman, UW-Whitewater, FY 74.

A report based on 540 responses from graduates and withdrawals during FY's 72, 73, 74.

Although the majority of the withdrawals were in effect "job outs", the jobs secured were not as related to the student's original goals as presumed. Additional counseling, programming, and financial help should be considered to aid students to achieve their highest desired potential occupational level. Adding instruction in terminology in various specialized fields, e.g., law, medicine, etc., should be investigated for those schools whose graduates enter such specialized employment. Expansion of job placement services to include withdrawing students should be considered.

06.W-496 EVALUATION OF ASSOCIATE DEGREE ACCOUNTING PROGRAMS IN TERMS OF EMPLOYER RATINGS OF JOB PERFORMANCE OF VTAE GRADUATES. J. Mazurek, GTI, Kenosha, FY 70.

The study, which originated from a state advisory committee, is based on 195 (53%) responses from employers of approximately 300 VTAE accounting graduates. Findings indicate that the technical accounting graduate will most likely work for manufacturing and service companies of various sizes. Over 83% of the employers rated the employees as "good" or "excellent". Over 50% of the 195 responding employers indicated satisfaction with employee performance in the general areas of communication skills, adherence to company policies, psychology of human relations, economics, office machines, typewriting understanding data processing, office and personnel management, accounting principles, and cost accounting.

Competencies with little or no value to present positions included areas in written communication, involvement in community projects, typewriting, mechanics of data processing, business law, credit and collections.

It is recommended that accounting students be given extensive training on 10-key adding listing machine and exposure to a variety of machines. Several recommendations were given as to elective courses. State and local advisory committee members and vocational educators reviewed the findings and several curriculum improvements were made.

17.438 NORTHWESTERN WISCONSIN RECREATION SURVEY FOR VOCATIONAL PROGRAM DEVELOPMENT. L. Vander Kamp, A. Vander Kamp, WITI, Shell Lake, FY 73.

The purposes of the study were to identify reasons tourists choose Northwestern Wisconsin as a vacation site; what services are desired by tourists; and to determine vocational training needs of resort and recreation operators. In phase I, two interviewers contacted 299 tourist groups and 51 questionnaires were completed by tourists in a random sampling of resort and recreation operators. Phase II included interviews with 20 randomly selected resort and recreation operators.

Findings indicate a real need for courses that will help present operators enhance their skills. Small operators need help because they are doing the various tasks themselves. Courses are needed for people interested in going into the resort business. Courses in public relations and hospitality should be developed. Short training courses for waitresses, dishwashers, housekeepers, hostesses, receptionists, and maintenance people for small operators should be provided. "Coaching" or counseling should be provided for small operators.

Distributive Occupations

09.007 SURVEY OF MARKETING STUDENTS. R. Cressman, MATC, Milwaukee, FY 72.

A report based on 180 (34%) responses from graduates and non-graduates from MATC-Milwaukee during FY 72. In general, both graduates and non-graduates considered the programs effective and valuable, some graduates wished they had taken more math. Recommendations were that consideration should be given to shorter term programs in marketing in addition to the degree programs, addition of more math courses, strengthening existing internship courses, and adding internship to the transportation and traffic management major.

General Education

06.155 SURVEY OF PHYSICS REQUIREMENTS FOR ENGINEERING TECHNICIANS. D. Doesmangen, GTI, Kenosha, FY 74.

A report based on 78 (39.2%) responses from graduates from seven engineering technology programs at GTI. Individual technology programs have diversified needs as to the topics from physics which they find useful in their work situation. There is also a degree of commonality in the physics needs of graduates and certain physics offerings would be beneficial to several programs. Special needs of individual programs have been identified.

02.036 AN INVESTIGATION TO DETERMINE THE ENGLISH COMPETENCIES REQUIRED OF SECRETARIES IN THE ADMINISTRATIVE, LEGAL AND MEDICAL AREAS WITH A SYNTHESIS INTO A CORE OF COMMON COMPETENCIES TO BE USED IN FORMING A BASIS FOR AN ENGLISH CURRICULUM. D. Radloff, WWTI, La Crosse, FY 72.

The central problem of the study was to determine the English competencies required of secretaries in the Medical, Legal and Administrative Secretarial Areas. The questionnaire/interview method was employed, utilizing 50 questionnaires and ten interviews in each of the three secretarial areas, and distributing them to employers and employees according to a radial density corresponding to the employment density of graduates of Western Wisconsin Technical Institute. Ninety-two (61.3%) questionnaire responses and 30 (100%) interview responses were used in the study.

The respondents and interviewees overwhelmingly ascribed primary importance to knowledge of the fundamentals of English (grammar, spelling vocabulary), and further indicated these competencies were the responsibility of the educator, not the employer. The study also indicated a very strong desire for a return to the "work ethic" including such traits as, initiative, diplomacy, flexibility in personal relations, good public relations, good "housekeeping" habits, hospitality, poise, courtesy, and phone courtesy.

10.043 EVALUATION OF PSYCHOLOGY OF HUMAN RELATIONS. J. Atwood, A. Weiner, MPTI, Fond du Lac, FY 1973.

This study was accomplished in two separate parts: (1) Part I dealt with evaluation of existing courses of instruction in human relations at 17 VTAE Schools, and (2) Part II dealt with the development of a proposed course of instruction in human relations for the technical institute. Major topics and subtopics of all such course descriptions were incorporated into a Likert-Type questionnaire. Expected performance objectives for the same content were incorporated into a second questionnaire. These questionnaire items were evaluated by four separate groups of individuals: (1) sixty-six students who took the course in human relations, (2) forty-four faculty who taught the course in human relations, (3) thirty-nine employers who hired students from the respective technical institute, and (4) fifty-nine select faculty and graduate students at UW-Milwaukee.

Validation criteria included: Social relations, personality dynamics, mental health, leadership ability, decision process, affect qualities. Findings suggested there is more overlap in content for the wide array of performance objectives than is desirable, and that the number of such performance objectives could be reduced. There appeared to be good agreement that personality dynamics was most important and social relations was of medium importance.

The proposed curriculum contains 8 two-week modules with 110 performance objectives under titles as follows: (1) Social Climate, (2) Scientific Process of Decision Making, (3) Inter-personal Attraction, (4) Inter-personal Rejection, (5) Confrontation and Crisis, (6) Group Process and Balancing, (7) Disadvantaged, and (8) World Problems.

14.040 DEVELOPING A LIST OF COMPETENCIES FOR THE COMMUNICATION SKILLS AREA IN POST SECONDARY VOCATIONAL-TECHNICAL EDUCATION. E. Boyce, R. Mahnke, M. Farning, NSTI, Wisconsin Rapids, FY 75.

Report of a survey of 382 (65% response) employees and 423 (66% response) employers in five program areas. Forty competencies were incorporated into a 5-point Likert-Type Scale.

Findings revealed that employers and VTAE graduates for each of the 15 occupational areas surveyed indicated that competency in some communication skills is more important than in others. Different occupations do indeed require different levels of competency in many of the 40 communication skills surveyed.

The survey results also gave strong support to the cluster concept; VTAE educational programs can be clustered for the purpose of teaching-learning communication skills. Competencies receiving top rankings were: "Maintain confidentiality concerning job-related information", "Remember essential information", "Work cooperatively with others" and "Give attention to details". It was recommended that: (1) the need for competency in specific communication skills be obtained from the supervisory level of business and industry and

from the employees to help develop the courses of study for communication skills classes, (2) the concept of clustering be used in scheduling students for communication skills classes. This would enable the teacher to do a better job of preparing these students with the communication skills they need on-the-job because of the relatedness of job tasks and responsibilities of many occupations, (3) similar state-wide communication skills surveys be made of other occupational areas.

Health Occupations

11.009 TASK ANALYSIS OF OPTEMETRIC ASSISTANT. M. Schroeder, LTI, Cleveland, FY 74.

The purpose was to provide data relating to the: (1) frequency and proficiency of tasks in an optometric practice that are presently or could be assigned to an assistant and (2) employment potential for trained optometric assistant graduates.

A task survey form was constructed and distributed to 347 Wisconsin Optometric Association members and 65 Optometric Assistants of Wisconsin. The return was 53%. In addition, 47 respondents completed and returned the first page of the survey form.

The data indicate average frequency and proficiency needed for each of the tasks and that a curriculum should include the necessary information and skills to meet certification. This data will be utilized in the development and evaluation of the curriculum within the Optometric Assistant Program at Lakeshore Technical Institute as part of the Health Core Curriculum beginning in the fall of 1974.

The data also indicated that there is a sufficient statewide job market for graduates.

02.HO.72 NEEDED ABILITIES - AN ANALYSIS FOR THE DENTAL ASSISTING PROGRAM. A. Smith, WWTI, La Crosse, FY 72.

To improve the Dental Assisting Program at Western Wisconsin Technical Institute the Health Occupations Division conducted a mail survey of 124 dentists and 122 dental assistants. The abilities needed to function successfully as dental assistants were divided into five general categories:

A. Reception and Office Procedures
B. Assisting the Dentists
C. Laboratory Procedures
D. Sterilization, Housekeeping, and Maintenance
E. Assisting in Teaching of the Patient

A questionnaire incorporating 111 competencies and a 5-point Likert-Type scale was used.

Findings show that the curriculum in Dental assisting generally should remain about the same.

It is evident from the study that the skills in category D are considered the most important and the laboratory procedure skills (C) the least. However, some of the skills should be regrouped. Even though there is only about a 1.3 difference in the rating of these two general categories, the response to specific skills within the laboratory procedure category provides a definite insight into which skills should be emphasized and those for which dentists and dental assistants think there is little use in practice.

Home Economics Occupations

03.039 IDENTIFYING COMPETENCIES IN THE FOOD SERVICE INDUSTRY. L. Wagner, C. Brainerd, D. Wagner, SWVTI, Fennimore, FY 73.

The purpose was to ascertain what occupational competencies are necessary for employees in the expanding and diversified Food Service Industry.

Questionnaires were mailed to 244 hospitals, restaurants, and graduates. Seventy-five (38%) respondents were divided into four groups, those who are: (1) graduates of high school food service programs, (2) graduates of post-secondary food service programs, (3) employers in restaurants, and (4) employers in hospitals.

The respondents completed 316 position evaluations that include 16 different job classifications. The positions evaluated include: Baker & Pastry Cook, Bartender, Busboy, Chef, Cook, Counter Person and/or Carhop, Dietary Aid, Food Service Supervisor, Food Service Worker, Host/Hostess, Kitchen Worker, Manager, Pantry Man/Woman, Short Order Cook, Sous Chef, and Waiter/Waitress.

Several workshops have been held, and a secondary-post-secondary articulated curriculum developed.

Trade and Industrial Occupations

01.014 EVALUATION OF CIVIL STRUCTURAL CURRICULUM IN TERMS OF RATINGS BY EMPLOYERS AND TECHNICIANS. L. Larson, R. Loer, District One, Eau Claire, FY 74.

A report based on 72 (43.3%) responses from employees and 44 (68.8%) responses from employers. The employers and employees felt the following subject areas were very important: (1) Mathematics areas of algebra, plane and solid geometry, trigonometry, strength of materials and operation of calculating machines, (2) General education areas of communications (oral and written), technical report writing and human relations, and (3) Design and drafting areas of detail drafting, layout drafting, and descriptive geometry.

In the technical areas, e.g., concrete and steel design, ratings varied with the corresponding type of employer.

Some areas were indicated as being of least value or in need of re-evaluation, e.g., analytical geometry, introduction to calculus, statistics, computer programming, general chemistry, electronics, American Government, industrial and consumer economics, micro-filming, computerized drafting and descriptive geometry.

W-1708 THE EFFECTIVENESS OF THE TECHNICAL LABORATORY EXPERIENCE PROVIDED BY THE ASSOCIATE DEGREE ELECTRONICS PROGRAM AT DISTRICT ONE TECHNICAL INSTITUTE: R. Quicker, VTAE District One, Eau Claire, FY 73.

The purpose was to determine if sufficient technical laboratory experiences were provided by District One Technical Institute to graduate a viable electronics technician. The sample consisted of graduates from the Associate Degree Program in electronics at District One Technical Institute during the period from May 1968 through May 1973, and their employers.

The data indicated that the graduates were generally capable of "good" or "better" performance in all types of technical duties except in design, where the ratings were in the upper "satisfactory" range.

Early graduates recommended that the electronics equipment be updated and more courses be devoted to transistors and integrated circuits.

Laboratory projects should be of such complexity that the students run into problems; the instructor should then help and guide them in analyzing and correcting their problems. This should develop better troubleshooting techniques and more self-reliance.

The electronics program should be upgraded to prepare more graduates for placement in local electronics-oriented positions, e.g., medical electronics.

0.3044 DETERMINATION OF REQUIRED SKILLS NECESSARY FOR JOB ENTRY LEVEL OF EMPLOYMENT IN THE AUTO BODY TRADE. J. Schindler, D. Wagner, SWVTI, Fennimore, FY 75.

A report based on 64 responses from employees and 68 responses from employers. The graduates and employers agreed that training time should be increased in major shop courses, related welding, related auto body electrical, refinishing, and frame straightening. The following three skills should be thoroughly covered in the units of instruction: (1) proper use of body hand and power tools, (2) proper methods of straightening procedures, and (3) proper methods of surface preparation. Graduates were satisfieid with their vocational training and shop facilities, but felt the biggest problem areas were "courses too short" and "too many students per class". The 10 skills receiving highest percent responses by employers as "very important to learn in school" were: use body hand tools, use basic body air tools, understand importance of properly prepared surface, recognize importance of well prepared feather edge, determine readiness of surface for topcoat, properly rough out damaged body panel, use basic body power tools, properly prepare vehicle for a refinish, recognize need for primer-sealer and use it, and properly spot repair a given panel with acrylic lacquer. Employees agreed with most of the above but rated use and safety with welding equipment, recognition of which paints to use, and recognition of frame damages. Curriculum revisions recommended development of smaller units for particular time periods.

03.024 ASSESSMENT AND DETERMINATION OF BASIC COMPETENCIES NECESSARY FOR UTILITY OPERATORS UTILIZING GROUND WATER SUPPLIES. G. Stegeman, D. Wagner, SWVTI, Fennimore, FY 75.

A study of the basic competencies required by water utility operators using a ground water source based on responses from 104 (56.5%) certified water treatment plant operators. The survey revealed characteristics of the utilities and the operators, the operators' competencies and the operators' training desires. It indicates those competencies which they perform in addition to those subjects for which further training is desired.

Recommendations include: (1) Current operators, as well as operator trainees should receive more thorough training in utility accounting, utility planning and budgeting, specifications and codes, and labor relations. (2) City Council, Board of Public Works, and Water Commission members should be made more aware of the many jobs and duties required of the operators and also of the needs and desires for further training. Recognition of the operator's skills and positive responses to the training needs will motivate the operator to up-grade the skills, improve the job attitude and dedication while reducing operator turnover. Certification of all trainees and operators should be encouraged as it is a means of stimulating professional growth while providing recognition to all who are successful. (3) A majority of the operators indicated that they do not perform bacteriological tests on water. Training in this area must be provided as it makes the operator aware of the importance of safeguarding the health of the communities and prepares the operator for the time when such testing will become mandatory. (4) Training in OSHA (Occupational Safety and Health Act) requirements should be provided since it has become a prime consideration in the operation and liability of the utility.

04.040 EVALUATIVE STUDY OF AUTO MECHANICS AND AUTOMOTIVE TECHNOLOGY PROGRAMS AND CURRICULA, M. Seamans, J. Rinck, M. Maiers, MATC-Madison, FY 72.

A report based on 325 (31%) responses from graduates, and 52 (13%) responses from employers. The types of businesses employing graduates varied greatly. Graduates and employers were generally satisfied with the training received. Many of the graduates felt that more hours of training are needed for the general areas of their automotive training and also for some speciality areas such as accessories, hydraulics and air conditioning. General education courses should be related to auto mechanics. Employers and employees felt a need to have good training and background in human and public relations. Severa specific needs are indicated in several tables in the report.

04.050 AN EVALUATIVE STUDY OF ARCHITECTURAL TECHNOLOGY PROGRAMS AND CURRICULA. Y. Tari, M. Maiers, MATC-Madison, FY 74.

A report based on 107 (28%) responses from employees and 39 (30%) responses from employers. Recommendations include: (a) Improve course work in American Institutions, Communications Skills and other general education areas by restructuring the courses more to the practical needs of the individual. (b) In the Technical Science area, eliminate most of the chemistry, reduce the Technical Science to six credits and offer it as Tech Science I and Tech Science II allowing each to be three credit courses. (c) Include more lab classes in the Materials of Construction and Strength of Materials courses. (d) Provide frequent meetings among the staff of the four Districts (#2, #4, #9, #15) offering the Architectural Technology Programs. These meetings should be scheduled at the Architectural Technology Programs. These meetings should be scheduled at least twice a year, with the purpose of coordinating the course offerings and the exchange of ideas as well as the teaching techniques among the participants. (e) The diversified aspect of the job demands seems to indicate a need for greater variety of specific knowledge in certain areas. In order to incorporate the skills required by the employers, the curricula of the Architectural Technology Programs should be structured more flexibly to the needs of the individuals. This can be accomplished by expanding the number of the elective courses forming a minor geared to satisfy the requirements of the employment categories mentioned in Item #2 of the Summaries. (f) In order to improve the placement record of the Districts, better follow-up procedures should be practiced by the placement officers assigned in each District.

(g) More efforts should be spent to encourage co-op type programs with the employers. In order to make this type of program possible, the schools should establish better contacts with the local representatives of the professional organizations such as A.I.A. (American Institute of Architects) and W.S.P.E. (Wisconsin Society of Professional Engineers).

08.W-516 INSTRUCTIONAL SYSTEMS STUDY-ELECTRONICS TECHNOLOGY. G. McGuice, W. Winter, WCTI, Pewaukee, FY 70.

This study involved three phases: Phase I included a task survey, task analysis, and development of behaviorally-stated student performance objectives. Phase II involved the course methodology, learning experiences and performance tests. Phase III included development of a self-instructional package.

The task analysis, based on 93 (31.6%) returns including 7 interviews, provided the data base for validating course content, formulating behaviorally stated performance objectives, developing course objectives, developing curricular materials, developing student evaluation criteria, and determining target population characteristics.

It is recommended that additional study be continued in the systems approach to instruction employing measurable behavior objectives.

09.082 SURVEY AND ANALYSIS OF BARBERING IN WISCONSIN. M. Vircks, MATC-Milwaukee, FY 72.

A report based on 1,632 (38.4%) responses from barbers. Recommendations included provisions be made for "trade extension" programs for all practicing barbers in the areas of salesmanship, marketing, psychology, public relations, merchandising, and specialized skills. A more detailed study should be made relevant to consolidating related instruction or practical training in cosmotology and barbering.

10.036 EVALUATION OF ELECTRONICS CURRICULUM IN TERMS OF EMPLOYER'S RATING OF JOB PERFORMANCE OF FORMER STUDENTS. R. O'Hagen, MPTI, Fond du Lac, FY 71.

A report based on 184 (41.5%) responses from employees and 80 (65.6%) responses from employers.

In the general education areas, communications received high ratings (knowledge is essential) and lower ratings in American Institutions (some related knowledge advisable.) The majority of responses in the technical areas indicated that "Knowledge is Essential" in 8 of the 14 subject areas. Data in the job activities or task proficiency indicated that the majority felt "Proficiency is Essential" in all activities.

Recommendations include a strengthening of courses in communications, fundamentals of electricity, electronic devices, circuit analysis - A.C. and D.C. A re-evaluation should be made in areas of analytic geometry, solid geometry, applied calculus, computer programming, statics, dynamics, strength of materials, American Institutions, and economics. A workshop of 55 electronics instructors was held. The findings and recommendations were reviewed. Many improvements were incorporated into existing curriculum.

13.001 CIVIL HIGHWAY CURRICULUM EVALUATION. W. Tiede, J. Nesbitt, NWTI, Gree Bay, FY 74.

A report based on 62 (36%) responses from employees and 21 (100%) responses from employers during FY 74. Fifteen of the 21 employers were interviewed.

The technical or skill areas appeared to be viewed similarly by employer and graduate. The employer places more emphasis on communications especially written reports than does the graduate. There needs to be closer coordination between the communications instructor and the technical instructor. In the mathematics areas, graduates placed greater emphasis on higher levels (calculus) than did employers. Graduates saw a greater need for basic science than did employers.

15.055-C AN ANALYSIS OF INDUSTRIAL SUPERVISOR TASKS IN NORTH CENTRAL VTAE DISTRICT. J. Woolsey, R. Bula, NCTI, Wausau, FY 73.

Nine industrial firms involving 28 industrial supervisors cooperated in the study. An instrument incorporating 44 tasks was used by the research team while observing supervisors on-the-job. Tasks were rated as to their frequency of performance during randomly selected time intervals during a supervisor's work shift. The researcher also indicated the significance of each task on a 5-point Likert-Type scale. Subjects were also asked to rate 12 selected tasks. A total of 10,428 single observations were obtained. The highest frequency task observed was "Inspected work or product of department". The highest significance task was "made personnel decision" on basis of cost analysis. There were significant differences in the frequency and significance of tasks, and in the test between actual observation of tasks and tasks reported as performed. A sample two dimensional task profile was generated. Advisory committees and vocational educators can use this data base to assist in curriculum development.

15.037 ANALYSIS OF CURRICULUM CHANGES, DEVELOPMENTS AND TRENDS IN MECHANICAL DESIGN TECHNOLOGY. E. Koshak, R. Paulsen, NCTI, Wausau, FY 72.

A report based on 128 (35%) responses from graduates and 55 (58%) responses from employers. Nearly all of the establishments were using mechanical design graduates principally for design and/or drafting functions. Some were using them in tool design, manufacturing and plant engineering, research and development and/or testing activities. Subject areas most often reported as essential for employment were: mathematics through trigonometry, slide rule usage, mechanics, communications, manufacturing processes related to metal fabrication, machine shop and welding, the properties, selection, and strength of materials, detail and layout drafting, descriptive geometry, mechanisms, and machine design. Others were also suggested. Areas of training in which graduates need most improvement were understanding of manufacturing processes, and the techniques and procedures used in design and drafting.

Several curriculum improvements are recommended in the study.

Special Needs Studies

The following is one of several projects conducted to ascertain the unique educational, training and other needs of disadvantaged, handicapped and other groups.

10.007 A PROBLEM SEARCH OF THE SERVICES PROVIDED AND THE UNMET NEEDS OF DISADVANTAGED AND HANDICAPPED RESIDENTS OF THE MORAINE PARK VTAE DISTRICT: A NOMINAL GROUP METHOD APPROACH. R. Hall, M. Callahan, MPTI, Fond du Lac, FY 73.

The primary goal was to establish priorities for the VTAE district in its role of services to disadvantaged and handicapped persons. The nominal group method involved over 80 nominal groups of staff and clients representing 17 programs or agencies in 4 counties. There were 3,543 problems identified by the nominal groups. These were disseminated to the participating agencies. It is recommended that each agency continue the Nominal Group Method and develop "in-house" applications for priority development, program development, and program evaluation. To eliminate overlap and duplication of services, increased coordination among agencies is encouraged. It is recommended that MPTI district sponsor inter-agency seminars and workshops to explore areas of common concern, cooperative programming, and avoidance of service duplication for mutual benefit. Other recommendations included cooperative educational planning, expanded vocational programs in correctional institutions, staff communications, client communication jobs and job placement, transportation, public relations, basic needs, and child care services.

Manpower Studies

In addition to the validation and evaluation studies to maintain relevance of programs, overall manpower opportunities and occupational education needs surveys are also conducted. These are usually conducted in cooperation with the state and local Job Service offices of the State Department of Industry, Labor and Human Relations. Recent studies include:

03.001 MANPOWER NEEDS IN SOUTHWEST WISCONSIN R. North, WSES, D. Wagner, SW Wisconsin VTAE District, Fennimore, FY 73.

The survey was conducted to ascertain manpower needs as related to occupational training programs in VTAE District #3.

Questionnaires were mailed to 1099 employers within the district during the months of November, 1972 through February, 1973. Five hundred and twenty-four respondents replied for a 45.8% return.

Openings were classified within ten broad areas. The occupational information obtained through the survey indicates that over 55% of the openings require at least a high school education. Over 12% of the openings require a vocational, technical education in addition to high school education.

W-1604 OCCUPATIONAL NEEDS SURVEY: Wis. DILHR, LTI, Manitowoc and Sheboygan Counties, FY 73.

A cooperative effort to determine the occupational needs of area industries and to help fill these needs through effective apprenticeship, on-the-job training and vocational school programs.

Fifty-five percent of the full-time openings demand a high school education or better. A high school diploma is sufficient education for 40 percent of the openings; eight percent of the openings demand some post-high school vocational training and four percent require graduation from a two-year, post-high school; two percent demand some college training and five percent require a college degree. Less than a high school education is sufficient for eleven percent of the Full-time openings.

Manpower studies are being finalized at NPTI, Fond du Lac and in progress at FVTI, Appleton.

Follow-Up Studies

Follow-up studies to ascertain job placement rates, relatedness of jobs to training and other data are also conducted on a regular basis to assist in maintaining relevance of VTAE programs, services and activities. These are now the responsibility of the Bureau of Program Accountability.

IV

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Over 25 projects have been summarized in the areas of job-task validation, curriculum evaluation, occupational education needs, and projected manpower needs.

These studies serve as valuable tools for use by vocational education curriculum developers, evaluators, administrators, and advisory committees when making decisions toward maintaining relevance of vocational, technical and adult education programs, services and activities in the Wisconsin VTAE system.

It is recommended that all indicators of program relevance and effectiveness be reviewed to ascertain which program and curricular areas should be selected for study through use of one or more of the designs and strategies summarized in this report. All program areas should be considered and priorities developed in terms of the anticipated funds and other resources to be available.

RK/mt